

REMARKS

In the Office Action mailed December 4, 2004, claim 37 is objected to because “transporting said solution from said electrode assembly and to a mask plate” (emphasis in original) appears to have improper grammar; claim 53 is objected to as being of improper dependent form for failing to further limit the subject matter of a previous claim; claims 37-40 and 43-45 were rejected under 35 USC §102(e) as being anticipated by Emesh et al. (U.S. 2002/0108861 A1); and claims 37-40, and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Datta et al. (U.S. 6,103,096) in view of Uzoh et al. (U.S. 6,261,426). Claims 41 and 42 were objected to as being dependent upon a rejected base claim but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Claims 32-36, 46-51, and 53-59 are allowed.

Applicants amend the Specification to correct scripting error. No new matter is added. Applicants address concerns of the Examiner. Independent claim 37 is amended to more clearly recite the present invention. Claims 46, 52-53, and 59 are amended to correct informalities. Duplicate claim numbering are corrected. No additional fees are required.

§102

Claims 37-40 and 44 were rejected under 35 USC §102 as anticipated by Emesh et al.

Claim 37 is amended and provides a process for electrochemically removing or depositing a layer of a semiconductor wafer. The process comprises the steps of:

- (a) flowing a solution through an electrode assembly which comprises a first electrode member and a second electrode member;
- (b) transporting said solution from said electrode assembly to a mask plate that interfaces said wafer;
- (c) wetting selected parts of said wafer with said solution; and
- (d) applying a current to said selected parts of said wafer.

Accordingly, the invention flows a solution through a first electrode member and a second electrode member, transporting the solution to a mask plate, wetting selected parts of the wafer with the solution, and applying a current to selected parts of the wafer. Depending on whether the first electrode member or the second electrode member is selected, electrochemical action is directed to the selected parts of the wafer.

The Examiner indicates flowing a solution through an electrode assembly which comprises a first electrode member and a second electrode member is shown by plurality of member 50 separated by channel 110; See Figs. 4, 6.

Emesh et al. provide an electrochemical planarization apparatus for planarizing a metallized surface on a workpiece that includes a polishing pad and a platen. Applicants submit that member 50 is a single platen. As illustrated in FIGS. 4 and 5, polishing pad 40 may have apertures 210 through which the electrolytic planarizing solution from channels 110 may flow. In addition, polishing pad 40 may have grooves 120 which are configured to effect transportation of the electrolytic planarization solution on polishing pad 40 during planarization. Apertures 210 may also be configured to expose portions of platen 50 which acts as a cathode when an electric potential is applied between the metallized surface 80 of wafer 60 and platen 50. Because polishing pad 40 is formed of insulative material, apertures 210 act to direct the electric field from platen 50 (cathode) to the metallized surface 80 (anode) of wafer 60. (see paragraph 45) Accordingly, channels 110 are merely holes through the platen 50 that are aligned with apertures 210 of the polishing pad 40. (see FIGs. 4 and 5)

Emesh et al. do not show or suggest flowing a solution through an electrode assembly which comprises a first electrode member and a second electrode member or wetting selected parts of the wafer with the solution as required by independent claim 37. Emesh et al. do not show or suggest separate electrode members. Moreover, the reference Emesh et al. is incapable of applying a current to said selected parts of said wafer as recited in claim 37.

For the above reasons, applicants submit that the pending claims recite at least one feature not shown or suggested by the references. Accordingly, applicants submit that the pending claims are allowable over the references. Applicants therefore request that the Examiner reconsider and withdraw the §102 rejections.

§103

Claims 37-40, 44 were rejected under §103 as obvious in view of Datta et al. and Uzoh et al. Under the Graham test, three factors must be evaluated: the scope and content of the prior art; the differences between the prior art and the claimed invention; and the level of ordinary skill in the art. (MPEP 706 and 2141 et seq.).

The independent claim is set forth above under the §102 discussion. Applicants submit that since the independent claims are not taught or suggested by the references, that the dependent claims are also allowable over the references.

The Office Action asserts Datta et al. disclose a method for etching a semiconductor wafer comprising the steps of:

flowing a solution (i.e., electrolyte) through an electrode assembly (40), which comprises a first electrode member and a second electrode member (i.e. plurality of member 42, See Fig 2);
wetting selected parts of the wafer (14) with the solution (Fig 1);
applying a current (from a power supply 28) to the selected parts of the wafer (Fig 1). (see O.A. pages 4-5)

Applicants respectfully traverse the assertion. Specifically, Datta et al. disclose in FIG. 2 that the head assembly 32 of the electrolyte delivery system 30 is preferably formed with a flat top plate 40 having a plurality of nozzles 42 through which the electrolyte can issue, for impinging upon the wafer 14. (see Col. 3, lines 64-67) Consequently, the plurality of member 42 is a plurality of nozzles that can not comprise of a first electrode member and a second electrode member as recited in claim 37.

The Examiner concedes that Data et al. fail to disclose the step of transporting the solution from the electrode assembly to a mask plate that interfaces the wafer. In addition, claims 37 recites wetting selected parts of the wafer with the solution and applying a current to the selected parts of the wafer. The combination of Datta et al. and Uzoh et al. do not teach or suggest the claimed invention requiring “wetting selected parts of the wafer with the solution and applying a current to the selected parts of the wafer”.

Claim 38 depends from claim 37 and further recites “operatively interfacing said first and second electrode members with said selected parts of said wafer” which is not taught or suggested by the references in combination with independent claim 37.

Claims 39 and 40 depend from claim 37 and further recites “directing said solution at said selected parts of said wafer” and “the selected parts comprise a peripheral part and a center part” which are not taught or suggested by the references in combination with independent claim 37 from which they depend.

Claim 44 depends on claim 37 and further recites “said electrode assembly comprises a cathode assembly” which is not taught or suggested by the references in combination with independent claim 37.

Accordingly, applicants respectfully request the Examiner withdraw the 35 U.S.C. 103(a) rejection of claims 37-40, and 44.

Conclusion

Applicants have addressed the concerns of the Examiner in pointing out and distinguishing the present invention with the prior art. Claims 37, 46, 52-53, and 59 are amended to more particularly point out and distinctly claim the subject matter which the applicants regard as the invention. The claims are patentable over the art of record. For these reasons, applicants respectfully request that the Examiner reconsiders and withdraws the rejections of the claims and allows the application. Accordingly, it is respectfully requested that the claims be allowed.

If any matters can be resolved by telephone, applicants request that the Patent and Trademark Office calls the applicant at the telephone number listed below.

Respectfully submitted,

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